MP MASTER
MA23440

6080A/82A

SYNTHESIZED RF SIGNAL GENERATOR

Operator Reference Guide

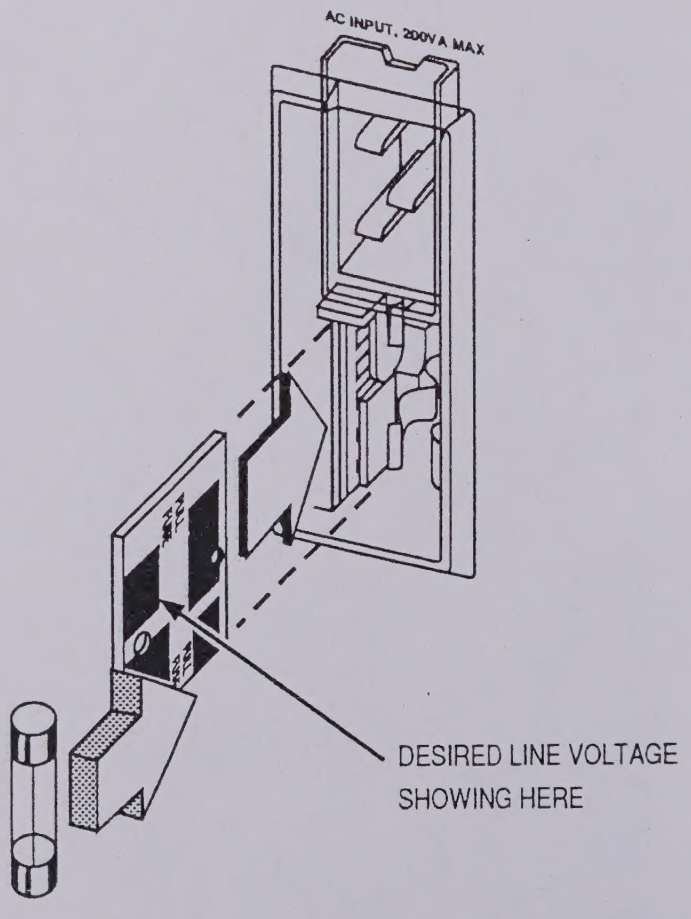
FLUKE

FUSE AND LINE VOLTAGE VERIFICATION

CAUTION

To prevent instrument damage, verify that the correct fuse is installed for the line voltage setting, and that the line voltage setting is compatible with local line power before plugging in the line cord.

Refer to the figure below to set the line voltage of the signal generator to match available line power. Insert the small pc board in the fuse module so that the appropriate voltage label is toward you. The figure also shows how to replace the line fuse. A plate attached to the rear panel shows the correct fuse value for each of the two line voltages showing on the line voltage selection pc board.



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FLUKE

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BASIC OPERATION

Power-Up State

Every time you toggle the power off and on, the Signal Generator is reset to the Preset State. To recall the settings that were in effect when the power was turned off, press [RCL], [0], [0].

Setting Parameters

The six primary parameters of the signal generator are:

[FREQ]	(Output frequency)
[AMPL]	(Output amplitude)
[AM]	(AM depth)
[FM|ϕM]	(FM/ØM deviation)
[MOD FREQ]	(Modulation frequency)
[MOD LEV]	(Modulation level)

These primary parameters can be individually changed by any of three methods:

- Entering parameters directly
- Editing the bright digit
- Incrementing and decrementing by a specified step size.

Each of these methods accomplishes the same result, but each method is particularly suited for a specific application. For example, you can establish an initial parameter value by entering it directly, then adjust that parameter by editing the bright digit or incrementing (or decrementing) it by step.

Entering Parameters Directly

To enter a parameter directly, proceed as follows:

1. Select a function.

Select one of the six functions using the FUNCTION keys. The bright digit appears in the corresponding display field. The presence of the bright digit in the display field indicates that the selected function parameter is ready to be edited or entered.

2. Enter the numeric data.

Enter the numeric data using the DATA keys. The numbers appear in the selected display field. The bright digit is off when numeric data is being entered.

3. Enter a unit

Press a UNITS key. This gives the numeric data its absolute value and causes the microprocessor to verify that the entered value is within allowable limits and to program the signal generator to the new state.

The bright digit is redisplayed. Once a function is selected, it remains in the active programming mode until a new function is selected. Parameter data for a selected function must be followed by a unit value and must be within the allowable range for the function. If the data is not within the allowable range, the display field flashes, and the REJ ENTRY status annunciator flashes.

A rejected entry does not affect the output of the signal generator. The output of the signal generator remains at its previous values until a new value is accepted.

Function parameter entry may be terminated at any time by the CLR/LCL key or by selecting another function. In Remote mode, parameter entry commands are provided for each of the six functions.

Editing the Bright Digit

To adjust the value of a parameter by editing the bright digit, proceed as follows:

1. Select a display field.

Select one of the six functions using the FUNCTION keys. A bright digit appears in the selected display field.

2. Position the bright digit.as necessary.

Use the ◁ or ▷ EDIT keys to position the bright digit on the desired decade of resolution.

3. Adjust the value of the bright digit.

Turn the knob clockwise to increment the bright digit. value. Turn the knob counter clockwise to decrement the bright digit value.

Incrementing and Decrementing by Step

You can change the value of a parameter in increments of a programmable step size by pressing the [△] or [▽] STEP keys. The STEP annunciator is lit in the display field affected by the STEP keys.

The step size for a given function remains in effect until a new step size is selected, even after power is turned off. To check the programmed step size, press [STEP] and hold it down. If you do not initially change the step sizes, the defaults shown below are in effect.

PARAMETER	DEFAULT STEP SIZE
Frequency	10 MHz
Amplitude	10 dB
AM Depth	10%
FM/ØM Deviation	1 kHz
Modulation Frequency	1 kHz
Modulation Level	0.1V

To change the maginitude of a step size, proceed as follows:

1. Select the step field.

Select the field for which you would like to change the step by pressing a FUNCTION key, followed by the [STEP] key to enable the step size entry.

2. Enter data for step size.

Select the numeric step size using the DATA keys.

3. Select the units.

Select a UNIT key to give the data its absolute value.

FRONT PANEL REFERENCE

MODULATION DISPLAY FIELD

A three-digit display, with associated annunciators that displays the AM depth, FM/ØM deviation, source of modulation signal, modulation frequency and modulation level. It also displays active error codes and status codes.

INT AM	The internal modulation oscillator is amplitude modulating the output
INT FM	The internal modulation oscillator is frequency modulating the output.
INT ØM	The internal modulation oscillator is phase modulating the output.
INT ⎍	The internal modulation oscillator is pulse modulating the output.
EXT AM	The ac coupled signal at the AM MODULATION INPUT connector is amplitude modulating the output.
EXT DC AM	The dc coupled signal at the AM MODULATION INPUT connector is amplitude modulating the output.
EXT FM	The ac coupled frequency modulating signal at the FMØM MODULATION INPUT connector is frequency modulating the output.

FRONT PANEL REFERENCE

MODULATION DISPLAY FIELD (cont)

EXT DC FM	The dc coupled signal at the FMØM MODULATION INPUT connector is frequency modulating the output
EXT ØM	The ac coupled signal at the FM/ØM MODULATION INPUT connector is phase modulating the output.
EXT DC ØM	The dc coupled signal at the FMØM MODULATION INPUT connector is phase modulating the output.
EXT 	The signal generator is pulse modulated by the signal connected to the MODULATION INPUT connector.
STEP	The Step Size Entry and Step Increment and Decrement keys affect the displayed modulation parameter.
%	The value displayed is the AM depth in percent.
MHz kHz DEV	The value displayed is the FM deviation in MHz, kHz, or Hz.
rad	The value displayed is the phase modulation deviation in radians.
dBm	The value displayed is the target level in dBm when performing a level calibration/compensation procedure.
LO RATE	The signal generator is in low-rate FM modulation mode.

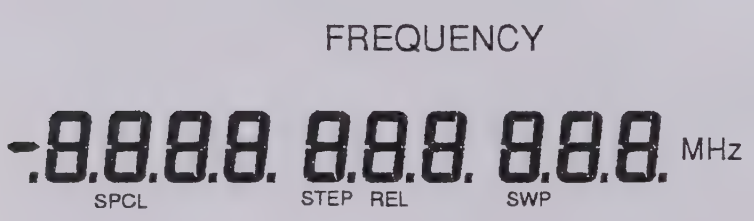
FRONT PANEL REFERENCE

MODULATION DISPLAY FIELD (cont)

AM HI	The external ac-coupled AM modulation signal is more than 2% above the nominal 1V pk requirement for calibrated operation.
AM LO	The external ac AM modulation signal is more than 2% below the nominal 1V pk input requirement.
FM HI	The external ac-coupled FM modulation signal is more than 2% above the nominal 1V pk requirement for calibrated operation.
FM LO	The external ac-coupled FM modulation signal is more than 2% below the nominal 1V pk input requirement.
V MOD LEV	The value displayed is the peak modulation output level in volts.
MHz Hz MOD FREQ	The value displayed is the modulation frequency in MHz, kHz, or Hz.

FREQUENCY DISPLAY FIELD

A signed ten-digit display with four annunciators, that displays RF output Frequency parameters of the signal generator. It also displays Special Function codes, status codes, and stored/recalled memory location codes.



FREQUENCY DISPLAY FIELD (cont)

STEP	The Step Size Entry and the Step Increment and Decrement keys affect the RF output frequency.
REL	The displayed frequency is relative to a reference frequency.
SPCL	Indicates certain Special Functions are enabled that are not otherwise annunciated. Pressing the [SPCM] key causes the enabled Special Function codes to be displayed.
SWP	The SWEEP ON/OFF keys apply to frequency sweep.

AMPLITUDE DISPLAY FIELD

A signed 3-1/2-digit display with eight annunciators that displays RF output amplitude parameters and status codes. Except when EMF units are selected, displayed amplitudes are computed for a 50Ω load.

STEP	The Step Size Entry and the Step Increment and Decrement keys affect the RF output amplitude.
REL	The displayed amplitude is relative to a reference amplitude.
SWP	The SWEEP ON/OFF keys apply to amplitude sweep.
dBf	The displayed amplitude is in decibels relative to one femtowatt.

FRONT PANEL REFERENCE

AMPLITUDE DISPLAY FIELD (cont)

dB	The displayed amplitude is in decibels relative to a reference amplitude, or is a step size value, a sweep increment value, or a sweep width value.
dBm	The displayed amplitude is in decibels relative to one milliwatt.
V µV mV	The displayed amplitude is in volts, microvolts, or millivolts.
dB mV	The displayed amplitude is in decibels relative to one millivolt.
dB µV	The displayed amplitude is in decibels relative to one microvolt.
EMF	The displayed amplitude is in EMF units, delivered into an open circuit or unterminated output. Toggled by special Function 851/850.

FRONT PANEL REFERENCE

STATUS DISPLAY

In status display field ,18 annunciators and a yellow LED indicate the status of the signal generator.

COMP	SWEEP	EXT REF	REMOTE
VCO	MAN	OVEN COLD	ADDR
OUT	SGL	REJ ENTRY	SRQ
ATT	AUTO	STATUS	
CAL	ASYM	RF OFF	

COMP	A compensation procedure is in progress. Flashes when the rear panel CALICOMP switch is set to 1 (ON).
VCO	A coarse loop, sum loop, or subsynthesizer compensation procedure is in progress.
OUT	An output compensation procedure is in progress.
ATT	An attenuator compensation procedure is in progress.
CAL	A calibration procedure is in progress. Flashes when the rear panel CALICOMP switch is set to 1 (ON).
SWEEP	A sweep is active.
MAN	Manual sweep mode is active.
SGL	Single sweep mode is active.
AUTO	Auto sweep mode is active.

FRONT PANEL REFERENCE

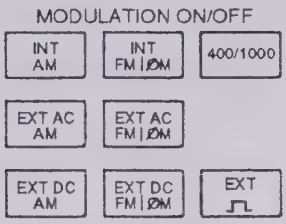
STATUS DISPLAY (cont)

ASYM	Indicates that the signal generator is configured to sweep in asymmetric mode.
EXT REF	The rear panel REF switch is in the EXT (external) position.
OVEN COLD	Ovened time base oscillators have not stabilized.
REJ ENTRY	Flashes when an invalid entry is made.
STATUS	The signal generator is operating outside its specified range. Flashes when a hardware-limited or a hardware fault condition is detected.
RF OFF	The RF OUTPUT is disabled.
REMOTE	The signal generator is in the remote (IEEE-488 interface) mode of operation.
ADDR	The signal generator is addressed to listen or talk on the IEEE-488 bus
SRQ	The signal generator has asserted the IEEE-488 SRQ signal.
Yellow LED	When lit, indicates that the signal generator is in the standby state and is connected to the line power. The LED is off when the signal generator is operating.

FRONT PANEL REFERENCE

MODULATION ON/OFF KEYS

Used to select type and source of modulation. With the exception of the 400/1000 key, these keys operate as independent push-on/push-off switches for the given modulation.



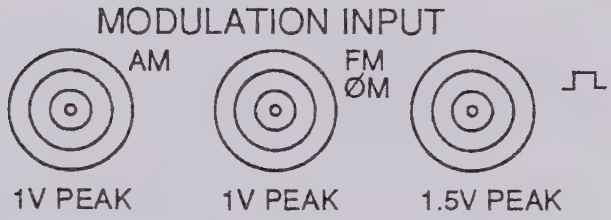
INT AM	Enables internal amplitude modulation.
EXT AC AM	Enables external ac-coupled amplitude modulation using the signal applied to the AM MODULATION INPUT connector.
EXT DC AM	Enables external dc-coupled amplitude modulation using the signal applied to the AM MODULATION INPUT connector.
INT FM|ϕM	Enables internal frequency or phase modulation.
EXT AC FM|ϕM	Enables external ac-coupled frequency or phase modulation using the signal applied to the FM/ØM MODULATION INPUT connector.
EXT DC FM|ϕM	Enables external dc frequency or phase modulation using the signal applied to the FM/ØM MODULATION INPUT connector.
400/1000	Toggles the internal modulation oscillator frequency between 400 and 1000 Hz. Used in place of the MOD FREQ key and data input.
SPCL 741	Enables Internal Pulse Modulation

FRONT PANEL REFERENCE

MODULATION ON/OFF (cont)

EXT ⎍	Enables external pulse modulation using the signal applied to the ⎍ MODULATION INPUT connector.

MODULATION INPUT

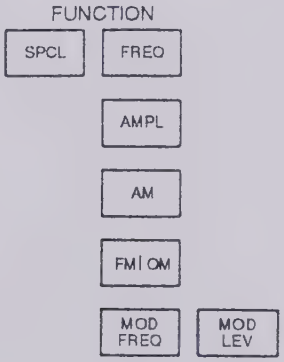


AM	A BNC connector for input of a 1V pk, external AM modulation signal.
FM/ØM	A BNC connector for input of a 1V pk, external FM/ØM modulation signal.
⎍	A BNC connector for input of a 1.5V pk, external pulse modulation signal.

FRONT PANEL REFERENCE

FUNCTION KEYS

Keys that select a function parameter to be entered or edited. When pressed, the bright digit appears in the corresponding display field of the selected function.



SPCL	Enables the Special Function mode. Special functions are enabled and disabled by using the DATA keys to enter a two or three digit numeric code.
FREQ	Selects the RF output frequency parameter for entry/modification.
AMPL	Selects the RF output amplitude parameter for entry/modification.
AM	Selects the amplitude modulation (AM) depth parameter for entry/modification.
FM|ØM	Selects the frequency or phase modulation (FM or ØM) deviation parameter for entry/modification.
MOD FREQ	Selects the modulation frequency parameter for entry/modification.
MOD LEV	Selects the modulation level parameter for entry/modification.

FRONT PANEL REFERENCE

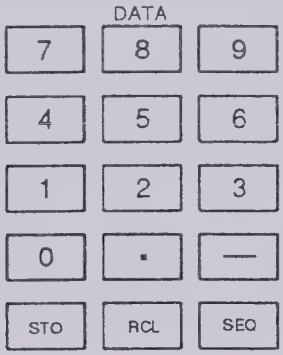
FUNCTION MODIFIER KEYS

STEP	After selecting one of the six functions, press this key to display the step size for the parameter and allow a new step size to be entered. The STEP up or down keys are enabled for the selected parameter.
SWEEP WIDTH	After the frequency or amplitude function has been selected, press this key to display the sweep width for the function and allow a new sweep width to be entered. The SWEEP mode keys are enabled for the selected function.
SWEEP INCR	After the frequency or amplitude function has been selected, press this key to display the sweep increment for the function and allow a new sweep increment to be entered. The SWEEP mode keys are enabled for the selected function.
SPCL 890-899	Digital Sweep Dwell Timer.
SPCL 880	Digital Sweep Symmetry

FRONT PANEL REFERENCE

DATA KEYS

A 10-digit (plus sign and decimal point key) keypad used for entering a parameter value, the Special Function code, or a memory recall/store location.

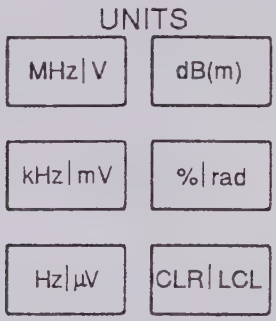


INSTRUMENT STATE MEMORY OPERATION KEYS

STO	Used with the DATA keys to store the current instrument state in a memory location. Memory locations 01 through 50 are available. When used in conjunction with any of the six FUNCTION keys, a single function parameter can be stored.
RCL	Used with the DATA keys to recall an instrument state from a memory location. Memory locations 01 through 50 are available for storage of instrument states; memory location 97 contains the Instrument Preset State. When used in conjunction with any of the six FUNCTION keys, a previously stored single function parameter can be recalled.
SEQ	Sequentially recalls, in increasing location order, the instrument states stored in memory. While the SEQ key is pressed, successive memory locations are displayed. When the key is released, the location last displayed is recalled. Press RCL followed by — to recall, in decreasing order, the stored instrument states.

UNITS KEYS

Keys that, with the exception of CLR|LCL, serve as the terminator of a function parameter entry. The units keys are also used for amplitude unit conversion and FM/ØM unit conversion.



MHz | V	Used with the FREQ, FM|ØM, and MOD FREQ function keys to program the parameter data in units of MHz. Used with the AMPL and MOD LEV function keys to program parameter data in units of Volts. Used with the Pulse Width entry Special Function to program parameter data in units of microseconds.
kHz | mV	Used with the FREQ, FM|ØM, and FM|ØM function keys to program the parameter data in units of kHz Used with the AMPL and MOD LEV function keys to program the parameter data in units of millivolts. Used with the Pulse Width entry Special Function to program the parameter data in units of milliseconds.
Hz | µV	Used with the FREQ, FM|ØM and MOD LEV function keys to program the parameter data in Hz Used with the AMPL and MOD LEV function keys to program parameter data in units of microvolts. Used with the Pulse Width entry Special Function to program parameter data in units of seconds.

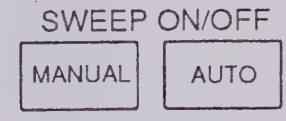
FRONT PANEL REFERENCE

UNITS KEYS (cont)

dB(m)	Used with the AMPL function key to program parameter data in terms of decibels relative to one milliwatt, or to an alternate reference if selected by Special Function. Used in relative amplitude mode or with the STEP SWEEP WIDTH or SWEEP INCR function modifier keys to modify parameter data in units of decibels ratio.
%| rad	Used with the AM function key to program the parameter data in units of percentage of AM depth. Used with the FM|ΦM function key to program the parameter data in units of radians of ØM deviation.
CLR|LCL	When the signal generator is in local operation, this key clears an entry and returns the signal generator to the last valid state. When the signal generator is in remote operation, this key returns local control.

SWEEP ON/OFF KEYS

Keys that enable or disable a sweep mode. The keys operate as independent push-on and push-off switches for the associated sweep mode.



MANUAL	Enables or disables manual sweep mode. The edit knob is used to move up or down within the sweep range for the selected sweep function.
AUTO	Enables or disables auto sweep mode. The signal generator repetitively progresses through the sweep range for the selected sweep function.
SPCL 882	Single Sweep.

EDIT KEYS

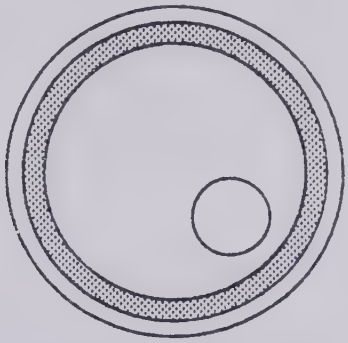
These keys are used to position the bright digit within a display field. Both keys repeat while pressed.

	Moves the bright digit one position to the left in the active display field.
	Moves the bright digit one position to the right in the active display field.

FRONT PANEL REFERENCE

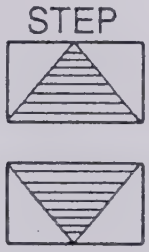
EDIT KNOB

Increases or decreases the bright-digit value. First, press one of the FUNCTION keys to move the bright digit to the desired display field.



STEP KEYS

These two keys work in conjunction with the [STEP1] Function Modifier key. Both keys repeat while held down



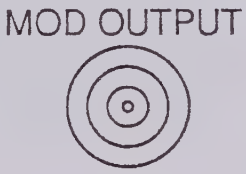
	Increments the function parameter with the STEP annunciator lit in the display field by the programmed step size.
	Decrements the function parameter with the STEP annunciator lit in the display field by the programmed step size

STATUS KEYS

Displays a Rejected Entry code (REJ ENTRY annunciator flashing) or Status codes in the display fields.

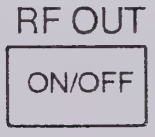
MOD OUTPUT CONNECTOR

A BNC connector for output of the internal modulation oscillator signal. The signal level is specified into a 600 Ω impedance. The modulation oscillator output level is preset to 0.0V when the instrument is turned on.



RF OUTPUT KEY

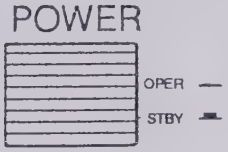
A push-on/push-off key (with a corresponding RF OFF annunciator in the STATUS display field) that enables and disables the signal at the RF OUTPUT connector.



FRONT PANEL REFERENCE

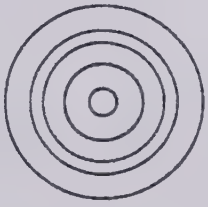
POWER SWITCH

A push-on/push-to-standby detent switch that energizes the signal generator or enables standby power.



RF OUTPUT CONNECTOR

Type "N" connector that supplies the signal generator RF output. At instrument turn-on, the RF output level is preset to -147 dBm.



SPECIAL FUNCTIONS

SPECIAL FUNCTION	DESCRIPTION
00	Clear special functions
01	Restore instrument preset state
02	Initiate power-on self tests
03	Display self test results
06	Self-tests w/rf & pulse tests
08	Display option loading status
09	Display software revision level
10	Display/Set IEEE-488 adress
11	Display/Set IEEE-488 addr. mode
12	Display/Set IEEE-488 language
13	Display/Enter service request mask
14	Set user request SRQ
15	Clear SRQ
20	Disable relative frequency mode
21	Enable relative frequency mode
30	Disable relative amplitude mode
31	Enable relative amplitude mode
40	Enable modulation oscillator output
41	Disable modulation oscillator output
42	Enter modulation frequency with 0.1 Hz res.
50	Disable fixed range amplitude
51	Enable fixed range amplitude
701	Enable phase adjustment
702	Zero phase adjust reference
710	Disable low-rate FM
711	Enable low-rate FM
720	Disable high-rate ØM
721	Enable high-rate ØM
730	Select normal range FM
731	Select low-distortion range FM
732	Select fixed range FM
740	Disable internal pulse modulation
741	Enable internal pulse modulation

SPECIAL FUNCTIONS (cont)

SPECIAL FUNCTION	DESCRIPTION
750	Select Sine oscillator waveform
751	Select triangle oscillator waveform
752	Select square oscillator waveform
758	Select pulse waveform
759	Enter pulse width
760	Use 10 MHz external reference input frequency
761	Use alternate external reference input freq.
770	Enable display
771	Disable display
780	Disable RF output blanking during freq band change
781	Enable RF output blanking during freq band change
801	Reset memory locations
802	Display/Set memory sequence dividers
810	Unlock memory store operations
811	Lock memory store operations
820	Disable secure mode
821	Enable secure mode
829	Erase nonvolatile memory
840	Select dBm amplitude display units
841	Select dBmV amplitude display units
842	Select dBuV amplitude display units
843	Select dBf amplitide display units
850	Disable EMF-Volts amplitude display mode
851	Enable EMF-Volts amplitude display mode
860	Select medium key repeat rate
861	Select fast key repeat rate
862	Select slow key repeat rate
870	Normal knob and step key operation
871	Knob disabled, normal step key operation
872	Normal knob, step keys EDIT up/down
873	Knob disabled, step keys EDIT up/down
880	Select symmetrical sweep symmetry
881	Select asymmetrical sweep symmetry
882	Initiate single sweep
890	Select sweep dwell time of 0 ms
891	Select sweep dwell time of 20 ms
892	Select sweep dwell time of 50 ms
893	Select sweep dwell time of 100 ms
894	Select sweep dwell time of 200 ms
895	Select sweep dwell time of 500 ms
896	Select sweep dwell time of 1s
897	Select sweep dwell time of 2s
898	Select sweep dwell time of 5s
899	Select sweep dwell time of 10s

REJECTED ENTRY ERROR CODES

ERROR CODE	DESCRIPTION
	FREQUENCY
1	Frequency out of range
2	Frequency step size out of range
3	Frequency sweep width out of range
4	Frequency sweep increment out of range
	AMPLITUDE
10	Amplitude out of range
11	Amplitude units conversion out of range
12	Amplitude units conversion not allowed with voltage reference
13	Amplitude step size out of range
14	Amplitude step with mixed units not allowed
15	Amplitude step/sweep width/sweep increment units conversion not allowed
16	Amplitude sweep width out of range
17	Amplitude sweep increment out of range
	AM
20	AM depth out of range
21	AM step size out of range
	FM/ØM DEVIATION
30	FM/ØM deviation out of range
31	FM/ØM step size out of range
32	FM/ØM units conversion not allowed when external FM enabled
33	FM/ØM units conversion out of range
34	FM/ØM step with mixed units not allowed
35	FM/ØM step units conversion not allowed
	MOD FREQUENCY/MOD LEVEL
40	Mod frequency out of range
41	Mod frequency step size out of range
42	Mod level out of range
43	Mod level step size out of range
44	Pulse width out of range

REJECTED ENTRY ERROR CODES (cont)

ERROR CODE	DESCRIPTION
	SWEEP
50	Sweep field (Freq/Ampl) cannot be changed while sweeping
51	Sweep cannot be enabled with current sweep parameters
52	Entry conflicts with active sweep
53	Selected function not allowed while sweep is active
54	Amplitude sweep with mixed units not allowed
55	Selected function not allowed unless sweep is active
	SPECIAL FUNCTION AND MEMORY
60	Special function code invalid
61	Memory location number invalid
62	Memory location data invalid
63	Store operation not allowed when memory locked
64	Display ON not allowed when secure ON
65	Nonvolatile erase failed
69	Phase adjust clock frequency out of range
	REMOTE
70	IEEE address must be <= 30
71	IEEE invalid edit or step
72	IEEE invalid command
73	IEEE bad command syntax
74	IEEE bad argument value
75	IEEE bad argument type
76	IEEE bad argument count
77	IEEE invalid keyword
78	IEEE 488.2 unterminated command
79	IEEE 488.2 interrupted query
80	IEEE 488.2 I/O deadlock
81	IEEE error/status queue overflow
82	IEEE recursive trigger buffer not allowed
83	IEEE command not allowed in local or listen-only mode
84	IEEE Query after indefinite response

REJECTED ENTRY ERROR CODES (cont)

ERROR CODE	DESCRIPTION
	CALIBRATION/COMPENSATION
90	CALICOMP switch not set to 1 (on)
91	Cal/comp adjustment out of range
92	Cal/comp procedure incomplete, data cannot be stored
93	Cal/comp data range error (too much correction)
94	Command not allowed during current cal/comp procedure
95	Command only allowed with appropriate cal/comp procedure
96	Internal cal/comp data transfer error
97	Stored cal/comp memory contains invalid data
98	MEC PROM ID code invalid, or MEC PROM checksum error
99	Sum loop compensation procedure failed
100	Coarse loop compensation procedure failed

OVERRANGE/UNCAL STATUS CODES

STATUS CODE	DESCRIPTION
	UNSPECIFIED OPERATION
201	Level correction disabled
202	High-stability reference oven cold
	HARDWARE LIMITED
220*	Level DAC at 0 (Amplitude fixed range)
221*	Level DAC at max (Amplitude fixed range)
222*	FM DAC at 0 (FM fixed range)
223*	FM DAC at max (FM fixed range)
224*	FM out of range for RF frequency band
225*	Mod frequency too low for pulse mode
226*	Pulse width >= 1/mod frequency
	HARDWARE FAULT
240*	RPP tripped
241*	ALC loop unleveled or AM overmodulation
242*	Sub synthesizer unlocked
243*	Coarse loop unlocked
244*	Sum loop unlocked
245*	Sum loop unleveled
246*	Reference unlocked
247*	FM loop unlocked or FM overmodulation
248*	DCFM DAC at 0
249*	DCFM DAC at max
250*	Multiple calibration/compensation memory errors
NOTE:	*Flashing codes (denoted by *) indicate abnormal operation or aberrated output. Non-flashing codes indicate operation outside specified range.*

SELF-TEST STATUS CODES

STATUS CODE	DESCRIPTION
00	No self test errors
301	Self tests aborted
302	Calibration/compensation memory checksum Test failed
303	RAM test failed
304	EPROM test failed
305	Non-volatile memory test failed
306	IEEE interface test failed
307-309	AM tests (Service Manual)
310-317	FM tests (Service Manual)
318-319	DCFM tests (Service Manual)
320-323	Coarse loop tests (Service Manual)
324-326	Subsynthesizer tests (Service Manual)
327-333	Sum loop tests (Service Manual)
334-336	RF output tests (Service Manual)
337-338	Pulse modulator tests (Service Manual)
339-356	Filter tests (Service Manual)

REMOTE/LOCAL STATE TRANSITIONS

The signal generator can be operated from either the front panel keys, or remotely, with a remote controller. In addition, the signal generator can be placed in a local lockout condition at any time by command of the controller.

When combined, the local, remote, and lockout conditions yield four possible operating states:

Local: The signal generator responds to local (front panel) and remote remote commands. This is also called "front panel operation."

Some remote commands are not allowed in the local state. These are mostly procedural commands such as the calibration and compensation commands.

Local with Lockout: Local with lockout is identical to local, except the signal generator goes into the remote with lockout state instead of the remote state when it receives a remote command.

The local with lockout state is entered by executing the Fluke 1722A BASIC "LOCKOUT" statement when using the 1722A as an IEEE-488 controller.

Remote: When the Remote Enable (REN) line is asserted and a controller addresses the signal generator as a listener, it enters the remote state. These conditions are met, for example, when a Fluke 1722A executes the BASIC statement "REMOTE \ PRINT @2 'FREQ 100 MHZ'" if the signal generator's address is 2. In the remote state, the REMOTE annunciator is lit. Front panel operation is restricted to use of the power switch and the CLR/LCL key. Press this key to return the signal generator to the local state. The controller may also send a Go To Local (GTL) interface message. (When the Fluke 1722A is used, the "LOCAL @2" BASIC statement does this if the signal generator's address is 2.)

Remote with Lockout: The remote with lockout state can be entered from the remote state or from the local with lockout state, but not directly from the local state.

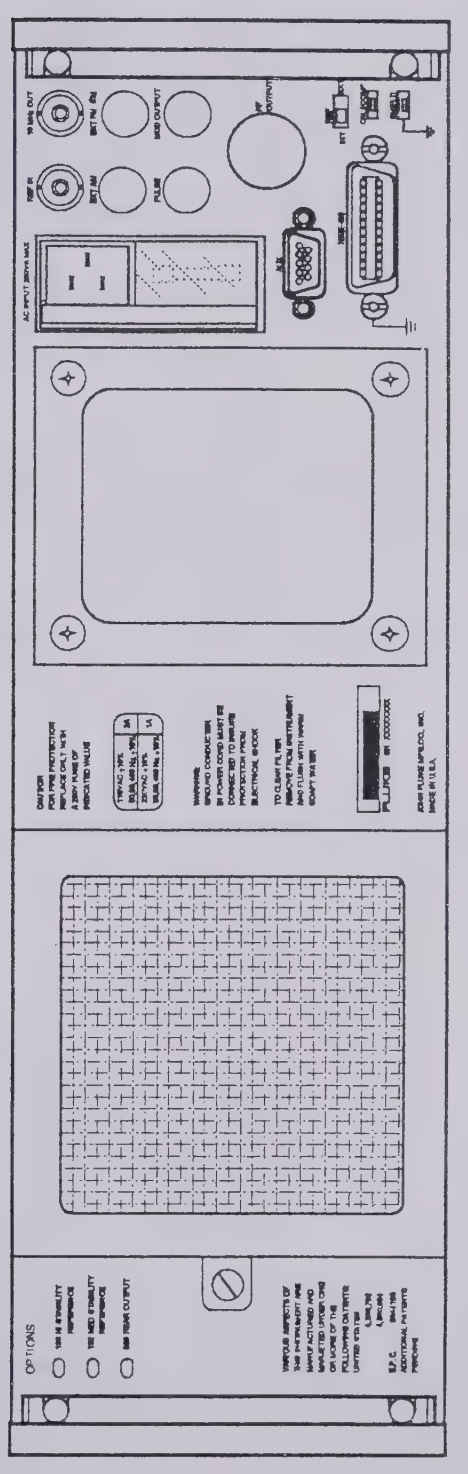
Remote with lockout: is similar to the remote state, but it is restricted: the [CLR/LCL] key does not return the signal generator to the local state.

Instead, the message "Loc out" is displayed in the FREQUENCY display field when the key is pressed.

To return the signal generator to the local with lockout state, the controller sends the Go To Local interface message (GTL). (When the Fluke 1722A is used as an IEEE-488 controller, the "LOCAL @2" BASIC statement does this if the signal generator's address is 2.)

FROM	TO	USE	FLUKE 1722A BASIC COMMAND
Local	Remote	MLA + REN	REMOTE
	Local/ Lockout	LLO + REN	LOCKOUT
Remote	Local	GTL or [CLR/LCL] key	LOCAL
	Remote/ Lockout	LLO + REN	LOCKOUT
Local/ Lockout	Remote/ Lockout	MLA + REN	REMOTE or any signal generator command
Remote/L ockout	Local	$\overline{\text{REN}}$	LOCAL
	Local/ Lockout	GTL	LOCAL @ <address>

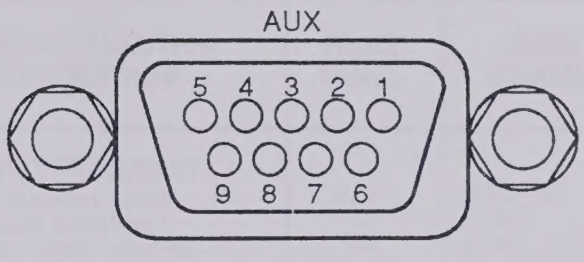
REAR PANEL REFERENCE



REAR PANEL - 6080A/82A

REAR PANEL REFERENCE

AC INPUT MODULE	Accepts the line cord, holds the line fuse, and allows selection of 110/120V or 220/240V ± 10%. The number visible through the window on the selector card indicates the nominal line voltage to which the signal generator must be connected. The line voltage is selected by orienting the selector card appropriately. A 2A fast-blow fuse is required for 110/120V operation and a 1A fast-blow fuse is required for 220/240V operation.
REF INT/EXT SWITCH	Selects frequency reference. When set to INT, the signal generator operates on its 10-MHz internal reference. The internal 10 MHz reference signal is available at the 10-MHz OUT connector. When set to EXT, the signal generator reference is a 1, 2, 5 or 10 MHz signal applied to the rear panel REF IN connector.
10 MHz OUT CONNECTOR	A BNC connector that provides a 10 MHz reference signal for external devices.
REF IN CONNECTOR	A BNC connector that accepts a 1 MHz, 2 MHz, 5 MHz, or a 10 MHz 0.5 to 2V rms sine or square wave reference signal into a nominal 50Ω termination.
IEEE-488 CONNECTOR	Connects to the IEEE-488 bus for remote operation.
AUX CONNECTOR	A 9-pin subminiature D-connector that provides for sweep z-axis (blanking/pen lift), sweep x-axis (DAC), and remote control of bright digit and memory sequence up and down operations. See the next page for the pinout diagram.
CAL I COMP SWITCH	This switch, when set to 1 (on) enables the signal generator to run closed-case calibration and compensation procedures. when set to 0 (off), it write protects calibration and compensation data.
Shield SWITCH	This switch connects the shield of the IEEE-488 connector and cable to the instrument ground.



PIN	DIRECTION	FUNCTION
1	Input	Sequence down memory location
2	Input	Sequence up memory location
3	--	Ground
4	Output	Pen Lift/Blanking
5	Output	Sweep DAC
6	--	--
7	--	--
8	--	--
9	Input	Toggle bright digit between frequency and amplitude fields.

AUX Connector Pin Assignments

NOTE

This connector is for foot-pedal or other external switch control. The input lines are active when taken to ground (pin 3). The inputs lines do not repeat if held at ground. The pin 5 output, Sweep DAC, is a 0-10V dc analog signal for driving a plotter. See Section 4E in the Operator Manual for more information.

SPECIAL FUNCTIONS

SPECIAL FUNCTION DESCRIPTION	FRONT PANEL	REMOTE COMMAND
RF OUTPUT FREQUENCY		
Relative frequency mode	20,21	FREQ_REL
Enable phase adjustment	701	PHASE
Zero phase adjust reference	702	PHASE_ZERO
External ref. input frequency	760,761	EXTREF_FREQ
Low-noise external reference	950, 951	LOWNOISE
RF OUTPUT AMPLITUDE		
Relative amplitude mode	30,31	AMPL_REL
Fixed-range amplitude	50,51	AMPL_RANGE
Amplitude display units	840-843	AMPL
EMF-Volts amplitude display mode	850,851	AMPL_EMFOUT
MODULATION		
Modulation oscillator output	40,41	MODOUT
Modulation frequency to 0.1 Hz	42	MODF
Low-rate FM	710,711	LORATEFM
High-rate ØM	720,721	HIRATEPM
Low-distortion/fixed-range FM	730-732	FM_RANGE
Internal pulse modulation	740,741	INT_PULSE
Modulation oscillator waveform	750-752,758	MOD_WAVE
Enter pulse width	759	PULSE_WIDTH
SWEEP		
Sweep dwell time	890-899	SWEEP_DWELL
Sweep symmetry	880,881	SWEEP_SYM
Initiate single sweep	882	SWEEP_SINGLE
MEMORY		
Reset memory locations	801	MEM_RESET
Display/Set mem. seq. dividers	802	MEM_DIVIDER
Write-protect memory locations	810,811	MEM_LOCK
Erase nonvolatile memory	829	MEM_ERASE
REMOTE		
Display/Set IEEE-488 address	10	n/a
Display/Set IEEE-488 addr. mode	11	n/a
Display/Set IEEE-488 language	12	GAL
Display/Enter service request mask	13	*SRE
Set user request SRQ	14	n/a
Clear SRQ	15	n/a
MISCELLANEOUS		
Clear special functions	00	SPCL 00
Restore instrument preset state	01	SPCL 01
Initiate power-on self tests	02	*TST?
Display self test results	03	STATUS
Display option loading status	08	*OPT?
Display software revision level	09	*IDN?
Disable display	770,771	DISPLAY
Frequency blanking	780, 781	FREQ_BLANK
Enable secure mode	820, 821	SECURITY
Step key repeat rate	860-862	KEY_RATE
Knob and step key operation	870-873	KNOB_STEP